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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DAVID JOHN CRAFT, MICHAEL NORMAN DAY,
HARM PETER HOFSTEE, CHARLES RAY JOHNS,
and JOHN SAMUEL LIBERTY

Appeal 2009-015314
Application 10/601,374
Technology Center 2400

Before DENISE M. POTHIER, ERIC B. CHEN, and JOHN A. EVANS, *Administrative Patent Judges*.

POTHIER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 22-37. Claims 1-21 have been canceled. Br. 2.[1] We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

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[1] Throughout this opinion, we refer to the Appeal Brief filed February 23, 2009, and the Examiner's Answer mailed June 15, 2009.

Invention

Appellants' invention relates to a technique for authenticating code or data in protected environment. *See* Abstract. Claim 22 is reproduced below with the key disputed limitation emphasized:

22. A secure processing system, comprising:
a main processor unit (MPU) coupled to a processor bus;
an attached processor complex (APC) coupled to the processor bus and comprising:
a local store configured to store computer instructions and data;
an attached processor unit (APU) coupled to the local store;
wherein the APC is configured to receive commands from the MPU via the processor bus, to store a cryptographic master key, and to operate in a non-isolated state and an isolated state; and
wherein *in response to a LOAD command received from the MPU, the APC is configured* to transition from the non-isolated state to the isolated state, *to partition the local store into a general access section accessible by the MPU and an isolated section accessible only by the APU*, to transfer a set of computer instructions or data into the isolated section of the local store, and to use the master key to extract and decrypt a portion of the computer instructions or data stored in the isolated section of the local store, thereby producing another cryptographic key.

The Examiner relies on the following as evidence of unpatentability:

Worley	US 2002/0194389 A1	Dec. 19, 2002
Smeets	US 6,769,062 B1	July 27, 2004 (filed Oct. 25, 2000)
Ellison	US 7,082,615 B1	July 25, 2006 (filed Sept. 22, 2000)

The Rejections

1. The Examiner rejected claims 22-27 and 29-36 under 35 U.S.C. § 103(a) as unpatentable over Ellison and Smeets. Ans. 3-11.

2. The Examiner rejected claims 28 and 37 under 35 U.S.C. § 103(a) as unpatentable over Ellison, Smeets, and Worley. Ans. 11-14.

THE OBVIOUSNESS REJECTION OVER ELLISON AND SMEETS

Regarding representative claim 22, Appellants argue that Examiner has not demonstrated that the references teach creating a partition as recited and, in particular, creating the recited isolated section in response to a LOAD instruction. Br. 11, 14. Appellants contend that Ellison teaches away from creating such a partition, because Ellison's rings are perpetually partitioned into normal and isolated execution portions. Br. 13. Appellants also assert that the Examiner does not provide a reason why creating such a partition would be obvious. Br. 11.

ISSUE

Under § 103, has the Examiner erred by finding that Ellison and Smeets collectively would have taught or suggested, in response to a LOAD command received from the MPU, the APC is configured to partition the local store into a general access section accessible by the MPU and an isolated section accessible only by the APU?

ANALYSIS

Before we address what Ellison and Smeets teach, we construe a key disputed term of claim 1 or "partition." While Appellants do not define this term (*see generally* Specification), Appellants describe the load command partitions the local store (LS) 110 into a general access section 111 and an isolated section 112 (Spec. 7:8-10, 24-26; Fig. 1). We also find, when

consulting dictionaries for an ordinary meaning, that a "partition" includes "the act or process of diving into parts"[2] and "[a] logically distinct portion of memory or a storage device that functions as though it were a physically separate unit."[3] Thus, using these definitions as a verb, "to partition" includes to designate or divide sections of storage into logical parts. Further, in the context of claim 22, the recited APC configured to partition the logical store can be broadly construed to include the APC being configured to designate or divide storage sections logically into a general access section accessible by the MPU and an isolated section accessible only by the APU.

The collective teachings of Ellison and Smeets teach or suggest such a configured APC. Ellison teaches a logical operating architecture 50 having two modes of operation (i.e., a normal execution mode and an isolated execution mode) and a processor nub loader 52 that operates only in the isolated execution mode. Col. 3, ll. 4-8; Fig. 1A. The isolated execution mode is initialized using a privileged instruction located in the processor along with the processor nub loader 52. Ans. 4 (citing col. 3, ll. 43-45); *see also* col. 4, ll. 63-65. Additionally, the processor nub loader 52 is a loader code that loads the processor nub 18 into an isolated area and is invoked by execution of an appropriate isolated instructions (e.g., Iso_init), which is transferred to the isolated area 70. Ans. 14-15 (citing col. 3, ll. 21-25, 43-47); *see also* col. 6, ll. 49-51; Figs. 1B-C.

Ellison thus teaches a load command (e.g., the privilege instruction which begins the process of loading the loader code and the isolated instruction invokes the loader 52 or loader code) being sent by the processor

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[2] *Webster's II New Riverside University Dictionary* 857 (1994).
[3] *Microsoft® Computer Dictionary* 392 (5th ed. 2002).

or an MPU. In response to the load command, Ellison also discusses the system operates in an isolated execution mode where the isolated area 70 of the physical memory becomes accessible to certain elements of the operating system. *See* col. 4, ll. 12-14, 19-21; col. 5, ll. 1-10; col. 6, ll. 13-17; Figs. 1B-C. The processor designates this storage section logically as an isolated section. *See id.* This contrasts with Ellison's normal execution mode where only the non-isolated areas 80 -- not the isolated area 70 -- are accessible and thus designated. *See* col. 3, ll. 26-31; col. 4, ll. 27-29; Fig. 1B. Ellison therefore, teaches or suggests an APC configured to designate and divide storage logically into parts -- a general access section (e.g., non-isolated area 80) and an isolated section (e.g., isolated area 70) in response to a LOAD command and when operating in the isolated execution mode.

Because the isolated areas 70's accessibility indicates whether Ellison's system is operating in a normal execution or an isolated execution mode, we also disagree with Appellants that the Examiner was wrong in discussing a command used to invoke the isolated execution state. *See* Br. 12. Also, even assuming without agreeing that Ellison's rings are perpetual (Br. 13), we do not find that Ellison teaches away from partitioning the local store in response to invoking the isolated execution mode or state (*id.*). That is, as explained above, Ellison teaches or suggests that the isolated area is made available to the specific components only when operating in the isolated execution mode or when the isolated mode is invoked by a load command. Thus, only when in this mode does Ellison provide accessibility and thus divides the local store (e.g., physical memory 60) into two logical sections -- a general access section (e.g., 80) and an isolated section (e.g., 70).

We further note that claim 22 requires not only that the APC is configured to partition into a general access section and an isolated section but also that is configured to partition into a general access section *accessible by the MPU* and an isolated section *accessible only by the APU*. The Examiner further relies on Smeets' disclosure, when combined with Ellison, to teach or suggest this entire recitation. *See* Ans. 4-5, 14-15. Also, while Appellants assert that Smeets fails to teach this limitation (*see* Br. 11), Appellants focus their arguments on Smeets failing to show an isolated section accessible only by the APU in response to a load command (*see* Br. 14). As noted, the Examiner did not rely on Smeets for the partition feature.

Specifically, the Examiner relies on Smeets to teach the concept of using separate processors for different applications, including using a secure processor for storing and obtaining private keys and digital signatures and for performing cryptographic calculations. *See* Ans. 5, 15 (citing col. 2, ll. 2-5, 19-23; col. 3, ll. 18-20, 26-28, 58-60; Fig. 1). Ellison likewise teaches a nub 16, which is part of the isolated execution functions, obtains access to private keys and generates signatures. *See* col. 8, ll. 33-65. When these teachings are combined, they predictably yield no more than an ordinarily skilled artisan would have expected or designating storage into a general access section accessible by one processor (e.g., a MPU) and an isolated section accessible only by a secure processor (e.g., an APU) so as to secure and ensure the integrity of Ellison's system by securing private keys and signatures. *See* Ans. 5 (citing col. 1, ll. 44-50); *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416-17 (2007). We therefore find, contrary to Appellants' assertion (Br. 11), that the Examiner has articulated a reason

with some rational underpinning to combine Ellison and Smeets and justifies a conclusion of obviousness.

For the foregoing reasons, Appellants have not persuaded us of error in the rejection of independent claim 22 and claims 23-27 and 29-36 not separately argued with particularity (Br. 14).

THE REMAINING OBVIOUSNESS REJECTION

Regarding representative claim 28, Appellants repeat the argument that Ellison and Smeets fail to teach or suggest the same disputed "partition" limitation in connection with claim 22. Br. 15. We are not persuaded by for the reasons discussed above and need not address whether Worley cures any deficiency. *See id.* This argument also fails to persuasively rebut the Examiner's prima facie case of obviousness (Ans. 11-14) – a position we find reasonable. We therefore, sustain the rejection of claims 28 and 37 not separately argued (Br. 15).

CONCLUSION

The Examiner did not err in rejecting claims 22-37 under § 103.

DECISION

The Examiner's decision rejecting claims 22-37 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

babc

Notice of References Cited	Application/Control No. 10/601,374	Applicant(s)/Patent Under Patent David John Craft et al. Appeal No. 2009-015314	
	Examiner Carlton Johnson	Art Unit 2400	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Webster's II New Riverside University Dictionary 857 (1994).
	V	Microsoft® Computer Dictionary 392 (5th ed. 2002).
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

WEBSTER'S II
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Table c

al derivative *n.* The derivative with respect to a single ble of a function of two or more variables, regarding other vari- as constants.

al differential equation *n.* A differential equation hav- least one partial derivative.

al differentiation *n.* Differentiation with respect to a variable in a function of several variables, regarding other vari- as constants.

ial fraction *n.* One of a set of fractions having an algebraic equal to a specified fraction.

ial pressure *n.* The pressure that one component of a mix- of gases would exert if it were alone in a container.

ial tone *n. Mus.* HARMONIC 1.

·ti·al·i·ty (pär'shē-ăl'ĭ-tē, pär-shăl'-) *n., pl.* **-ties. 1.** The state of partial. **2.** Prejudice or bias. **3.** A special liking : PREDILECTION.

·tial·ly (pär'shə-lē) *adv.* To a degree : not completely.

·ti·ble (pär'tə-bəl) *adj.* [LLat. *partibilis* < Lat. *partiri*, to divide < part.] Capable of being parted, divided, or separated : DIVISIBLE.

·tic·i·pant (pär-tĭs'ə-pənt) *n.* One that participates or takes ace <

adj. Taking part : PARTICIPATING.

·tic·i·pate (pär-tĭs'ə-pāt') *v.* **-pat·ed, -pat·ing, -pates.** [Lat. *participat-* < *particeps*, partaker : *pars*, part + *capere*, to

vi. To join or share with others : take part <*participate* in a

vt. Archaic. To share in : partake of. **—par·tic'i·pa'tive** *adj.* **—par·tic'i·pa'tor** *n.*

·tic·i·pa·tion (pär-tĭs'ə-pā'shən) *n.* **1.** The act or fact of partici- <*participation* in a contest> **2.** A taking part or sharing h student's *participation* in the class project>

syns: PARTICIPATION, INVOLVEMENT, SHARING *n. core* ving participation, esp. affording the opportunity for individ- participation, as in the democratic process.

·tic·i·pa·to·ry (pär-tĭs'ə-pə-tôr'ē, -tōr'ē) *adj.* Characterized by

·ti·cip·i·al (pär'tĭ-sĭp'ē-əl) *adj.* [Lat. *participialis* < *participium*, Of, relating to, consisting of, or formed with a participle.

·ti·cip·i·al·ly *adv.*

·ti·ci·ple (pär'tĭ-sĭp'əl) *n.* [ME < OFr. < Lat. *participium.*] A l verb form used with an auxiliary verb to indicate certain and also functioning independently as an adjective.

·ti·cle (pär'tĭ-kəl) *n.* [ME < Lat. *particula*, dim. of *pars*, part.] y piece or part : SPECK. **2.** A minuscule amount, trace, or

SUBATOMIC PARTICLES

Particle Name	Particle Symbol*	Anti-particle Symbol	Mass**	Particle's Electric Charge†	Average Lifetime‡ (sec)
photon	γ	(γ)	0	0	stable
electron's neutrino	ν_e	$\bar{\nu}_e$	0	0	stable
muon's neutrino	ν_μ	$\bar{\nu}_\mu$	0	0	stable
electron	e^-	e^+	1	−1	stable
muon	μ^-	μ^+	207	−1	2.2×10^{-6}
pion	π^0	π^0	264	0	0.8×10^{-16}
pion	π^+	π^-	273	+1	2.6×10^{-8}
kaon	K^+	K^-	966	+1	1.2×10^{-8}
kaon	K^0	$\bar{K}^0$	975	0	0.9×10^{-10} or 5.2×10^{-8}
nucleon	p	$\bar{p}$	1,836	+1	stable
nucleon	n	$\bar{n}$	1,839	0	$1.0 \times 10^{+3}$
hyperon	Λ	$\bar{\Lambda}$	2,183	0	2.6×10^{-10}
hyperon	Σ^+	$\bar{\Sigma}^-$	2,328	+1	0.8×10^{-10}
hyperon	Σ^0	$\bar{\Sigma}^0$	2,333	0	$< 1.0 \times 10^{-14}$
hyperon	Σ^-	$\bar{\Sigma}^+$	2,343	−1	1.7×10^{-10}
hyperon	Ξ^0	$\bar{\Xi}^0$	2,572	0	3.0×10^{-10}
hyperon	Ξ^-	$\bar{\Xi}^-$	2,585	−1	1.7×10^{-10}
omega	Ω^-	Ω^+	3,276	−1	1.5×10^{-10}

frequently written without superscripts indicating charge; antiparticles ated by a bar over the particle symbol, but variations using parentheses, or at all are also widely used.

expressed in terms of the electron's mass.

the electron's charge, and for particles only; antiparticles have the opposite the particle is neutral.

particle lasts an indefinitely long time and has no known decay mode; the of two particles, the average lifetime of each of which is given; when the neutron is stable.

degree <not a *particle* of truth> **3.** *Physics.* **a.** A body whose spatial extent and internal motion and structure, if any, are irrelevant in a specific problem. **b.** An elementary particle. **4. a.** One of a class of forms, as prepositions or conjunctions, consisting of a single word that has no inflection. **b.** A suffix or prefix, as *-ly* or *non-*. **5.** A small division or section of something written, as a clause of a document. **6.** *Rom. Cath. Ch.* **a.** A small piece of the consecrated Host. **b.** One of the smaller, individual Hosts.

parti-col·ored (pär'tē-kŭl'ərd) *adj.* [Obs. *party*, parti-colored + COLORED.] Having parts or sections colored differently : PIED.

par·tic·u·lar (pər-tĭk'yə-lər) *adj.* [ME < *particuler* < OFr. < LLat. *particularis* < Lat. *particula*, dim. of *pars*, part.] **1.** Of, belonging to, or associated with a single person, group, thing, or category. **2.** Separate and distinct from others : SPECIFIC. **3.** Worthy of note : EXCEPTIONAL. **4.** Especially or excessively concerned with details or niceties : FASTIDIOUS. **5.** *Logic.* Encompassing some but not all of a class or group : RESTRICTED. —Used of a proposition. **6.** *Math.* Designating a solution of a differential equation, as distinguished from the general representation of the set of all solutions. —*n.* **1.** An individual item, fact, or detail <mistaken in every *particular*> **2.** *often* **particulars.** Items or details of news or information. **3.** *often* **particulars.** A separate case or individual instance. **4.** *Logic.* A particular proposition. **—in particular.** Particularly : especially <Eat fresh fruit *in particular.*>

▲ word history: The word *particular* is derived from Latin *particula*, "a little part." The derived Latin adjective, *particularis*, originally meant "partial, pertaining to one part." The word was frequently used in contrast to *universalis*, "universal," and in this way came to denote a single specific person or thing.

par·tic·u·lar·ism (pər-tĭk'yə-lə-rĭz'əm) *n.* **1.** Exclusive interest in or adherence to one's own group, party, sect, or nation. **2.** A policy of permitting each state in a nation or federation to act independently. **3.** The belief that an individual is elected to salvation and grace by God's free choice rather than by God's foreseeing the individual's response. **—par·tic'u·lar·ist** *n.* **—par·tic'u·lar·is'tic** *adj.*

par·tic·u·lar·i·ty (pər-tĭk'yə-lăr'ĭ-tē) *n., pl.* **-ties. 1.** The quality or state of being particular or distinct rather than general. **2.** Exactitude of detail, esp. in description. **3.** Attention to or concern with details : FASTIDIOUSNESS. **4.** A specific detail or point : PARTICULAR. **5.** An individual characteristic : PECULIARITY.

par·tic·u·lar·ize (pər-tĭk'yə-lə-rīz') *v.* **-ized, -iz·ing, -iz·es.** —*vt.* **1.** To enumerate or state in detail : ITEMIZE. **2.** To treat or mention individually : SPECIFY. —*vi.* To give details or particulars. **—par·tic'u·lar·i·za'tion** *n.* **—par·tic'u·lar·iz'er** *n.*

par·tic·u·lar·ly (pər-tĭk'yə-lər-lē) *adv.* **1.** To a great degree : ESPECIALLY. **2.** With particular emphasis or reference : SPECIFICALLY. **3.** In a particular manner : INDIVIDUALLY. **4.** In detail.

par·tic·u·late (pər-tĭk'yə-lĭt, -lāt') *adj.* Of, relating to, or made up of separate particles. —*n.* A particulate substance.

part·ing (pär'tĭng) *n.* **1.** The act or process of separating or dividing. **2.** A separation or division. **3.** A departure or leave-taking. —*adj.* Relating to, done, given, or said on separating or departing <a *parting* jest> **—parting of the ways.** A point of divergence.

parti pris (pär'tē prē') *n.* [Fr. : *parti*, decision + *pris*, p.part. of *prendre*, to take.] An inclination for or against one that inhibits impartial judgment : BIAS.

par·ti·san[1] (pär'tĭ-zən) *n.* [Fr. < OItal. *partigiano* < *parte*, part < Lat. *pars.*] **1.** A usu. militant advocate or supporter of a party, cause, faction, person, or idea <"I avow myself the *partisan* of truth alone" —William Harvey> **2.** A member of a detached, often unofficially organized body of fighters who attack an enemy within occupied territory : GUERRILLA. —*adj.* **1.** Of, relating to, or typical of a partisan or partisans. **2.** Devoted to or biased in support of a single party or cause. **—par'ti·san·ship'** *n.*

par·ti·san[2] *also* **par·ti·zan** (pär'tĭ-zən) *n.* [OFr. *partizane* < OItal. *partesana*, var. of *partigiano*, supporter. —see PARTISAN[1].] A weapon having a long shaft surmounted by a blade with broad, horizontally projecting cutting edges, used mainly in the 16th and 17th cent.

par·ti·ta (pär-tē'tə) *n.* [Ital. < *partire*, divide < Lat. —see PARTITE.] *Mus.* A set of related instrumental pieces, as a suite or series of variations.

par·tite (pär'tīt') *adj.* [Lat. *partitus* < *partire*, to divide < *pars*, part.] Divided into parts.

par·ti·tion (pär-tĭsh'ən) *n.* [ME *particioun* < OFr. *partition* < Lat. *partitio* < *partire*, to divide < *pars*, part.] **1. a.** The act or process of dividing into parts. **b.** The state of being so divided. **2.** Something that separates, as a panel, screen, or partial wall dividing a larger area. **3.** A part or section into which something has been divided. **4.** *Math.* **a.** An expression of a positive integer as a sum of positive integers. **b.** The decomposition of a set into a family of mutually exclusive sets. **5.** *Logic.* Analysis of a class into its component parts. —*vt.* **-tioned, -tion·ing, -tions. 1.** To divide into parts, pieces, or sections. **2.** To divide or separate by a partition <*partition* off a dining area> **—par·ti'tion·ist** *n.* **—par·ti'tion·ment** *n.*

par·ti·tive (pär'tĭ-tĭv) *adj.* [Lat. *partitivus* < *partire*, to divide. —see PARTITE.] **1.** Serving to divide into parts. **2.** Indicating a part as

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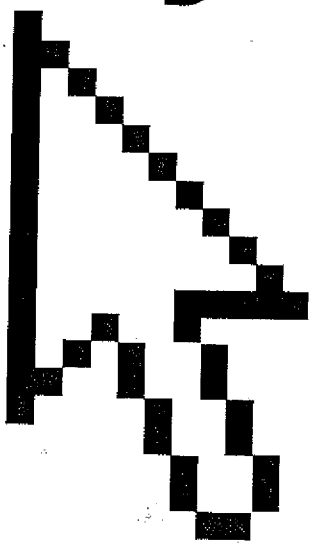

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parrallaxing *n.* A 3-D animation technique, often used by computer game developers, where backgrounds are displayed using different levels of speed to achieve realism. For example, distant levels move at a slower speed than closer levels, thereby giving the illusion of depth. *See also* animation.

parse *vb.* To break input into smaller chunks so that a program can act upon the information.

parser *n.* An application or device that breaks data into smaller chunks so that an application can act on the information. *See also* parse.

partition *n.* **1.** A logically distinct portion of memory or a storage device that functions as though it were a physically separate unit. **2.** In database programming, a subset of a database table or file.

Partition Boot Sector *n.* The first sector in the system (startup) partition of a computer's bootable hard disk, or the first sector of a bootable floppy disk. On an x86-based computer, the Partition Boot Sector is read into memory at startup by the Master Boot Record. It is the Partition Boot Sector that contains the instructions required to begin the process of loading and starting the computer's operating system. *See also* Master Boot Record, partition table.

partition table *n.* A table of information in the first sector of a computer's hard disk that tells where each partition (discrete portion of storage) on the disk begins and ends. The physical locations are given as the beginning and ending head, sector, and cylinder numbers. In addition to these "addresses," the partition table identifies the type of file system used for each partition and identifies whether the partition is bootable—whether it can be used to start the computer. Although it is a small data structure, the partition table is a critical element on the hard disk.

partnership *n.* The settings on a desktop computer and Windows CE device that allow information to be synchronized, as well as copied or moved between the computer and device. The mobile device can have partnerships with up to two desktop computers. *See also* synchronization (definition 6).

Pascal *n.* A concise procedural language designed between 1967 and 1971 by Niklaus Wirth. Pascal, a compiled, structured language built upon ALGOL, simplifies syntax while adding data types and structures such as subranges, enumerated data types, files, records, and sets. *See also* ALGOL, compiled language. *Compare* C.

pASP *n.* *See* pocket Active Server Pages.

pass[1] *n.* In programming, the carrying out of one complete sequence of events.

pass[2] *vb.* To forward a piece of data from one part of a program to another. *See also* pass by address, pass by value.

pass by address *n.* A means of passing an argument or parameter to a subroutine. The calling routine passes the address (memory location) of the parameter to the called routine, which can then use the address to retrieve or modify the value of the parameter. *Also called:* pass by reference. *See also* argument, call[1]. *Compare* pass by value.

pass by reference *n.* *See* pass by address.

pass by value *n.* A means of passing an argument or a parameter to a subroutine. A copy of the value of the argument is created and passed to the called routine. When this method is used, the called routine can modify the copy of the argument, but it cannot modify the original argument. *See also* argument, call[1]. *Compare* pass by address.

passivation *n.* In Sun Microsystems's J2EE network platform, the process of "turning off" an enterprise java bean (EJB) by caching it from memory to secondary storage. *See also* Enterprise JavaBeans, J2EE. *Compare* activation.

passive hub *n.* A type of hub used on ARCnet networks that passes signals along but has no additional capability. *See also* ARCnet. *Compare* active hub, Intelligent hub.

passive-matrix display *n.* An inexpensive, low-resolution liquid crystal display (LCD) made from a large array of liquid crystal cells that are controlled by transistors on the side of the display screen. One transistor controls an entire row or column of pixels. Passive-matrix displays are commonly used in portable computers, such as laptops and notebooks, because of their thin width. While these displays have good contrast for monochrome screens, the resolution is weaker for color screens. These displays are difficult to view from any angle other than straight on, unlike active-matrix displays. However, computers with passive-matrix displays are considerably cheaper than those with active-matrix screens. See the illustration. *Also called:* dual-scan display. *See also* liquid crystal display, supertwist display, transistor, twisted nematic display. *Compare* active-matrix display.